

REMARKS

The Final Office Action mailed April 29, 2005 has been carefully reviewed and the following remarks are made in response thereto.

Claims 1 and 10-12 stand finally rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 4,365,006 to Baker. Claims 2-4 and 9 stand finally rejected under 35 U.S.C. § 103(a) as being unpatentable over Baker in view of U.S. Patent No. 6,045,933 to Okamoto and claim 13 stands finally rejected under the same as being unpatentable over Baker in view of U.S. Patent No. 5,747,185 to Hsu. Applicants gratefully acknowledge the Office Action's continued indication that claims 5-8 would be allowable if rewritten in independent form to include all of the limitations of the base claim and any intervening claims.

Applicants respectfully submit that independent claim 1 is patentably distinguishable over the cited references as required by § 102 and § 103. Applicants further submit that none of the cited references, whether considered alone or in combination, discloses the arrangement of: "a vaporizer arranged in the exhaust gas circulation passage, "a fuel injection mechanism which injects liquid fuel into the circulated exhaust gas in the vaporizer" and "the vaporizer vaporizing the injected fuel." Thus, independent claim 1, as well as claims dependent directly or indirectly therefrom, are allowable. This distinction will be further described below.

THE CLAIMS ARE ALLOWABLE OVER THE CITED REFERENCES

According to one embodiment of the present invention, a fuel cell system includes an exhaust gas circulation passage which circulates part of an exhaust gas from the fuel cell back to the fuel cell. The fuel cell system also includes a vaporizer arranged in the exhaust gas circulation passage and a fuel injection mechanism that injects liquid fuel into the circulated exhaust gas in the vaporizer. With the arrangement of the vaporizer and the fuel injection mechanism, the vaporizer is able to vaporize the injected fuel.

In rejecting independent claim 1, the Office Action has taken the new position that the vaporizer 16 of Baker is equivalent to the fuel injection mechanism, and the venture nozzle 17 is equivalent to the vaporizer (page 2 of the Office Action). The Office Action further

takes the position that the vaporized fuel is in a liquid state (page 3 of the Office Action). Applicants respectfully disagree.

As previously pointed out, Fig. 1 of Baker discloses that cathode exhaust gas coupled to conduit 14 is combined with hydrocarbon fuel by first vaporizing the fuel in vaporizer 16 and then utilizing the vaporized fuel to promote injection of the exhausted gas from the conduit 14 into the vaporized fuel (col. 3, lines 8-14). The vaporized fuel is introduced into the central bore 17a of a venturi nozzle 17 whose jet port communicates with the conduit 14 (col. 3, lines 14-17). Instead of a venturi nozzle, the vaporized fuel and the exhausted gas can be separately introduced into the partial oxidizing unit (col. 3, lines 23-25).

Thus, combining the vaporized fuel, which is at a higher pressure than the exhaust gas, with the exhaust gas increases the pressure of the exhaust gas which is later introduced to a container 11 along with the vaporized fuel. Having the vaporized fuel in a liquid state would be counterintuitive to the teachings of Baker. There is nothing in Baker that even remotely suggests the vaporized fuel is in a liquid state. The purpose of combining the exhaust gas and the vaporized fuel is to increase the pressure of the exhaust gas. It would seem virtually impossible to elevate the pressure of the exhaust gas with a liquid. Moreover, Baker specifically states that the fuel is in a vaporized state when it is moved passed the exhaust gas (col. 2, lines 1-3). As defined, vaporized means “to be converted into a vapor, wherein a vapor is a gaseous state of a substance that, under ordinary conditions, is a liquid or a solid” (Webster’s II New College Dictionary, 1995, page 1220).

With the vaporized fuel being in a gaseous state leaving the vaporizer 16, Baker fails to disclose or suggest the arrangement of, a vaporizer arranged in the exhaust gas circulation passage, a fuel injection mechanism which injects liquid fuel into the circulated exhaust gas in the vaporizer, and the vaporizer vaporizing the injected fuel as claimed. Rather, as discussed above and shown clearly in Figure 1, Baker discloses that the vaporizer 16 is provided outside the conduit 14, which corresponds to the exhaust gas circulation passage of the present invention, and is therefore not arranged in the exhaust gas circulation passage. In addition, Baker explicitly discloses that the fuel is vaporized by the vaporizer 16 before it is injected into the exhausted gas from the conduit 14, and therefore liquid fuel is not injected

into the circulated exhaust gas as recited in claim 1. Accordingly, claim 1 is patentably distinguishable from Baker.

Neither Okamoto nor Hsu, whether considered along or in combination, can remedy the deficiency of Baker, and these references were not relied upon in the Office Action for such purpose.

In view of the above remarks, it is respectfully submitted that the cited references do not anticipate the invention as defined by independent claim 1. Thus, independent claim 1 is allowable. Moreover, since independent claim 1 is allowable, claims 2-4 and 9-13 are also allowable by virtue of their direct or indirect dependence from allowable independent claim 1 and for containing other patentable features. Further remarks regarding the asserted relationship between any of the claims and the cited references is not necessary in view of their allowability. Applicants' silence as to the Office Action's comments is not indicative of being in acquiescence to the stated grounds of rejection.

Applicants believe that the present application is now in condition for allowance. Favorable reconsideration of the application as amended is respectfully requested.

The Examiner is invited to contact the undersigned by telephone if it is felt that a telephone interview would advance the prosecution of the present application.

The Commissioner is hereby authorized to charge any additional fees which may be required regarding this application under 37 C.F.R. §§ 1.16-1.17, or credit any overpayment, to Deposit Account No. 19-0741. Should no proper payment be enclosed herewith, as by a check being in the wrong amount, unsigned, post-dated, otherwise improper or informal or even entirely missing, the Commissioner is authorized to charge the unpaid amount to Deposit Account No. 19-0741. If any extensions of time are needed for timely acceptance of

papers submitted herewith, Applicant hereby petitions for such extension under 37 C.F.R. §1.136 and authorizes payment of any such extensions fees to Deposit Account No. 19-0741.

Respectfully submitted,

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